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**Quantitative Applications of Geostationary Weather Satellite Data for
Nowcasting – Recent Progress and Challenges**

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Monitoring and prediction of highly localized weather events over a very short-term period, typically ranging from minutes to a few hours, are very important for decision makers and public action. The nowcasting capability usually relies on radar observations through monitoring and extrapolation. With advanced high-resolution imaging and sounding observations from geostationary weather satellites, the nowcasting capability is enhanced through combining radar, satellite and other data, and quantitative applications of those data for nowcasting are advanced through using machine learning techniques. Those applications include monitoring and location, impact area, intensity, water vapor, atmospheric instability, precipitation, physical properties, optical properties of the severe storm at different stages (pre-convection, initiation, development, and decaying), identification of storm types (wind, snow, hail, etc.), predicting the occurrence and evolution of the storm. Satellite observations can provide environmental characteristics in the pre-convection stage and are very useful for situation awareness and storm warning. This presentation overviews the recent progress on quantitative applications of geostationary satellite data in nowcasting, challenges, future perspectives are also addressed and discussed.